

**The U.S. Transuranium & Uranium Registries:  
Reaping the Benefits of Lifetime Follow-up of Plutonium Worker Health and Internal  $\alpha$ -Dose**

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September 2008 was the 40<sup>th</sup> anniversary of the U.S. Atomic Energy Commission's vision in establishing the National Plutonium Registry. Its successors, the U.S. Transuranium and Uranium Registries (USTUR), continue to follow into 'old age' individuals with documented accidental exposures to actinide elements who voluntarily permitted access to their employment, occupational exposure histories and medical records. To date, 326 past-worker volunteers have donated their tissues for scientific research, including 35 whole body donors. Each individual's autopsy examination results (coded for primary and contributing causes of death), their exposure and medical records, together with USTUR's results of radiochemical analyses of tissues and major organs, enable the Registries to compile a comprehensive and definitive collection of scientific data. The database and associated tissue materials serve to encapsulate the real human experience (including actual health outcomes) of accidental exposures to long-lived  $\alpha$ -emitting actinides over the history of U.S. nuclear materials production. This USTUR resource is unique in that, in many cases, the quality and scope of the available *in-vivo* bioassay data and tissue analyses together enable 'state-of-the-art' assessments of tissue doses to be performed for individual persons – for reliable comparison with that individual's long-term health outcome. The assessed tissue doses are anchored (testable) by directly measured physical quantities – the actual tissue contents of radionuclides at the time of death. This presentation illustrates how the donated (privacy-protected) case information and USTUR measurements are being applied to increase the credibility (level of certainty) in determining actual tissue doses received by accidentally-exposed weapons-site and other workers from intakes of all important forms of plutonium, americium and uranium. With the exception of rare cases with very high tissue doses, there are no indications of deleterious health outcomes among USTUR Registrants that may be associated with actinide exposure.

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